

What is claimed is:

1. A method for generating an aerosol, comprising the steps of:

preparing a solution of a first component in a liquid component such that
after volatilization of the liquid component by passing the solution through a flow
5 passage while heating the solution, an aerosol is formed having a predetermined
particle size distribution of the first component, wherein the solution is prepared
such that the amount of the first component therein is sufficient to achieve the
predetermined particle size distribution of the first component; and

10 passing the solution through the flow passage while heating the solution to
a temperature sufficient to volatilize the liquid component, wherein the flow
passage comprises an outlet through which the first component and the volatilized
liquid component flow, and wherein aerosol particles are formed.

2. The method according to claim 1, wherein the solution is prepared such
that the amount of the first component therein is sufficient to achieve a
15 predetermined ratio of the mass median aerosol diameter of the first component
aerosol particles to the mass median aerosol diameter of the liquid component
aerosol particles.

3. The method according to claim 2, wherein the first component is
present in an amount effective to cause the ratio of the mass median aerosol
20 diameter of the first component aerosol particles to the mass median aerosol
diameter of the liquid component aerosol particles to be greater than or equal to
about 0.75 after formation of the aerosol.

4. The method according to claim 3, wherein the first component is
present in an amount effective to cause the mass median aerosol diameter of the

first component aerosol particles and the mass median aerosol diameter of the liquid component aerosol particles to be approximately equal after formation of the aerosol.

5 5. The method according to claim 2, wherein the first component is present in an amount effective to cause the ratio of the mass median aerosol diameter of the first component aerosol particles to the mass median aerosol diameter of the liquid component aerosol particles to be less than or equal to about 0.75 after formation of the aerosol.

10 6. The method according to claim 1, wherein the flow passage is of capillary dimensions which permit volatilization of substantially all of the liquid component when the flow passage is heated.

15 7. The method according to claim 1, wherein the solution is formed by combining the first component in the form of solid particles with the liquid component, wherein the liquid component comprises a solvent in which the solid particles are dissolved.

8. The method according to claim 1, wherein at least some of the first component is volatilized during the heating of the solution.

20 9. The method according to claim 8, wherein the volatilized liquid component and the volatilized first component condense after mixing with ambient air to form the aerosol.

10. The method according to claim 1, wherein the first component comprises a medicament suitable for treating a respiratory ailment.

11. The method according to claim 1, wherein the first component is budesonide.

5 12. The method according to claim 1, wherein the concentration of the first component in the solution is less than about 0.5% by weight.

13. The method according to claim 12, wherein the concentration of the first component in the solution is less than about 0.1% by weight.

10 14. The method according to claim 1, wherein the liquid component is selected from the group consisting of water, propylene glycol, ethylene glycol, dipropylene glycol, diethylene glycol, triethylene glycol, tetraethylene glycol, oleyl alcohol and mixtures thereof.

15. The method according to claim 1, wherein the aerosol is deposited into a lung of an animal or human.

15 16. The method according to claim 1, wherein at least some of the aerosol particles comprise the first component and the liquid component.

17. The method according to claim 1, wherein at least some of the aerosol particles consist of the first component.

18. The method according to claim 1, wherein the first component flows out of an outlet of the flow passage contemporaneously with the volatilized liquid component.

5 19. The method according to claim 1, wherein the mass median aerosol diameter of the aerosol particles is from about 0.3 to 2 μm .

20. The method according to claim 1, wherein the solution is prepared such that the amount of the first component therein is sufficient to achieve a substantially monodispersed particle size distribution of the first component.

10 21. The method according to claim 20, wherein the geometric standard deviation of the particle size distribution of the first component is less than or equal to about 2.

22. A method for generating an aerosol, comprising the steps of:
preparing a solution formed of a first component in a liquid component such that after volatilization of the liquid component by passing the solution
15 through a flow passage while heating the solution, an aerosol is formed having a substantially monodispersed particle size distribution of the first component, wherein the solution is prepared such that the boiling point of the liquid component is sufficient to achieve the substantially monodispersed particle size distribution of the first component; and
20 passing the solution through the flow passage while heating the solution to a temperature sufficient to volatilize the liquid component, wherein the flow passage comprises an outlet through which the first component and the volatilized liquid component flow, and wherein aerosol particles are formed.

23. The method according to claim 22, wherein the flow passage is of capillary dimensions which permit volatilization of substantially all of the liquid component when the flow passage is heated.

5 24. The method according to claim 22, wherein the solution is formed by combining the first component in the form of solid particles with the liquid component, wherein the liquid component comprises a solvent in which the solid particles are dissolved.

25. The method according to claim 22, wherein at least some of the first component is volatilized during the heating of the solution.

10 26. The method according to claim 25, wherein the volatilized liquid component and the volatilized first component condense after mixing with ambient air to form the aerosol.

27. The method according to claim 22, wherein the first component comprises a medicament suitable for treating a respiratory ailment.

15 28. The method according to claim 22, wherein the first component is budesonide.

29. The method according to claim 22, wherein the concentration of the first component in the solution is less than about 0.5% by weight.

20 30. The method according to claim 29, wherein the concentration of the first component in the solution is less than about 0.1% by weight.

31. The method according to claim 22, wherein the liquid component is selected from the group consisting of water, propylene glycol, ethylene glycol, dipropylene glycol, diethylene glycol, triethylene glycol, tetraethylene glycol, oleyl alcohol and mixtures thereof.

5 32. The method according to claim 22, wherein the aerosol is deposited into a lung of an animal or human.

33. The method according to claim 22, wherein at least some of the aerosol particles comprise the first component and the liquid component.

10 34. The method according to claim 22, wherein at least some of the aerosol particles consist of the first component.

35. The method according to claim 22, wherein the first component flows out of an outlet of the flow passage contemporaneously with the volatilized liquid component.

15 36. The method according to claim 22, wherein the mass median aerosol diameter of the aerosol particles is from about 0.3 to 2 μm .

37. The method according to claim 22, wherein the geometric standard deviation of the particle size distribution of the first component is less than or equal to about 2.

38. A method for generating an aerosol, comprising the steps of:

preparing a solution of a first component in a liquid component such that after volatilization of the liquid component by passing the solution through a flow passage while heating the solution, an aerosol is formed having a predetermined and substantially monodispersed particle size distribution of the first component, wherein the solution is prepared such that the amount of the first component therein and the boiling point of the liquid component are sufficient to achieve the predetermined and substantially monodispersed particle size distribution of the first component; and

passing the solution through the flow passage while heating the solution to a temperature sufficient to volatilize the liquid component, wherein the flow passage comprises an outlet through which the first component and the volatilized liquid component flow, and wherein aerosol particles are formed.

39. A method for controlling a particle size distribution of an aerosol, comprising:

preparing a solution comprising a first component in a liquid component, wherein the solution achieves a predetermined particle size distribution of the first component upon volatilization of the solution by passing the solution through a flow passage while heating the solution.

40. The method according to claim 39, wherein the amount of the first component is selected to achieve the predetermined particle size distribution of the first component.

41. The method according to claim 39, wherein the boiling point of the liquid component is selected to achieve the predetermined particle size distribution of the first component.

5 42. The method according to claim 39, wherein the first component is a medicament.

43. A method for providing a monodispersed particle size distribution of an aerosol, comprising:

10 preparing a solution comprising a first component in a liquid component, wherein the solution achieves a monodispersed particle size distribution of the first component upon volatilization of the solution by passing the solution through a flow passage while heating the solution.

44. The method according to claim 43, wherein the amount of the first component is selected to achieve the monodispersed particle size distribution of the first component.

15 45. The method according to claim 43, wherein the boiling point of the liquid component is selected to achieve the monodispersed particle size distribution of the first component.

46. The method according to claim 43, wherein the first component is a medicament.